ISSN 0021-5198

THE JAPANESE JOURNAL OF PHARMACOLOGY

Volume 84 2000

Official Publication
of
The Japanese Pharmacological
Society

THE JAPANESE JOURNAL OF

PHARMACOLOGY

Published Monthly by The Japanese Pharmacological Society

Volume 84 2000

http://wwwsoc.nacsis.ac.jp/tjps/jjp

Chief Editor
Yasuyuki Nomura (Sapporo)

Press Editor
Yasushi Kuraishi (Toyama)

Editors
Hiroshi Iwao (Osaka)
Koichiro Kawashima (Tokyo)
Miwa Misawa (Tokyo)
Takamura Muraki (Tokyo)
Ikunobu Muramatsu (Fukui)
Susumu Okabe (Kyoto)
Kohtaro Taniyama (Nagasaki)
Mitsuhiro Yoshioka (Sapporo)

Language Editor
S.M. Jung

Editorial Assistant
Y. Takezaki

European Editor
Ezio Giacobini (Geneva, Switzerland)

North American Editor
Tony J.F. Lee (Springfield, IL, USA)

Editorial Advisory Board
M. Akagi (Tokushima)
K. Fuji (Kyoto)
C. Hamada (Kyoto)
M. Iino (Tokyo)
Y. Imaizumi (Nagoya)
S. Kaneko (Kyoto)
H. Kawasaki (Okayama)
K. Kitamura (Fukuoka)
S. Kobayashi (Kawasaki)
S. Kohno (Kyoto)
K. Miyamoto (Kanazawa)
M. Miyazaki (Takatsuki)
K. Momose (Tokyo)
K. Nakayama (Shizuoka)
M. Nomoto (Kagoshima)
S. Ohkuma (Kurashiki)
K. Onodera (Sendai)
H. Ozaki (Tokyo)
T. Suzuki (Tokyo)
K. Takeuchi (Kyoto)
T. Uematsu (Gifu)
K. Umemura (Hamamatsu)
Y. Yamaguchi (Tokyo)
Y. Yamazoe (Sendai)
T. Yanagisawa (Sendai)
S. Yano (Chiba)

International Advisory Board
J.E. Brayden (Burlington, VT, USA)
P. Dominiak (Lübeck, Germany)
A. Fisher (Ness Ziona, Israel)
E. Hamel (Montreal, Canada)
M.D. Linnik (San Diego, CA, USA)
K. Löffelholz (Mainz, Germany)
G. Pepeu (Florence, Italy)
J. Tamargo (Madrid, Spain)
L.F. Tseng (Milwaukee, WI, USA)

Abstracted/Indexed in

Biological Abstracts (BIOSIS), Chemical Abstracts, EMBASE/Excerpta Medica, Index Medicus (MEDLINE), Current Contents/Life Sci. (CC/LS), Reference Update (RIS), Elsevier BIOBASE/Current Awareness in Biological Sciences, ISI/BIOMED

Editorial and Publishing Correspondence

Editorial Office, The Japanese Pharmacological Society, Kantohya bldg, Gokomachi-Ebisugawa, Nakagyo-ku, Kyoto 604-0982, Japan
TEL: +81-75-252-4641, FAX: +81-75-252-4618, E-mail: LDB00573@nifty.ne.jp Information for contributors is printed at the end of each issue.

Subscription Information

Volumes 82–84 (12 issues plus Supplement) will appear in 2000. Subscription orders can be entered only by calendar year.
Subscription/Back issue orders and inquiries should be sent to:
All orders inside Japan and individual orders outside Japan: the Editorial Office at the address given above.
Annual subscription rate is ¥20,000 including postage.
Institutional orders outside Japan: Maruzen Co., Ltd., Export Department, PO Box 5050, Tokyo International 100-3199, Japan
TEL: +81-3-3273-3234, FAX: +81-3-3271-6076. Annual subscription rate is US$250.00 including SAL mail postage.
Microfilm/Microfiche editions are available from Bell & Howell Information and Learning (formerly UMI), 300 North Zeeb Road, PO Box 1346, Ann Arbor, MI 48106-1346, USA TEL: +1-800-521-0600

Permission to reproduce, in whole or in part, any material published in this Journal must be obtained in written form from both the author of the article and the Publisher, the Editorial Office of The Japanese Pharmacological Society at the address given above.

Notice about photocopying: In order to photocopy any work from this publication, you or your organization must obtain permission from either of the following organizations that have been delegated for copyright clearance by the copyright owner of this publication:
In all countries except for the USA: Japan Academic Association for Copyright Clearance (JAACC), 41-6 Akasaka 9-chome, Minato-ku, Tokyo 107-0052, Japan
TEL: +81-3-3475-5618, FAX: +81-3-3475-5619, E-mail: kammori@msh.biglobe.ne.jp
In the USA: Copyright Clearance Center, Inc. (CCC), 222 Rosewood Drive, Danvers, MA 01923, USA
TEL: +1-978-750-8400, FAX: +1-978-750-4744, www.copyright.com

Copyright © The Japanese Pharmacological Society 2000

CONTENTS

Volume 84 • 2000

Reviews

Number 2 October 2000

Therapeutic Strategies in Alzheimer's Disease: M1 Muscarinic Agonists — Abraham Fisher — 101

Number 3 November 2000

—Current Perspective—
Role of Cannabinoid Receptor in the Brain as It Relates to Drug Reward — Tsuneyuki Yamamoto and Kohji Takada — 229

—Current Perspective—
The Parkinsonian Models: Invertebrates to Mammals — Yoshihisa Kitamura, Shun Shimohama, Akinori Akaike and Takashi Taniguchi — 237

Number 4 December 2000

—Current Perspective—
Actions of Tachykinins Within the Heart and Their Relevance to Cardiovascular Disease — Donald B. Hoover, Yingzi Chang, John C. Hancock and Lili Zhang — 367

Regular Papers

Number 1 September 2000

Positive Inotropic Effects of Imidazoline Derivatives Are Not Mediated via Imidazoline Binding Sites but α_1-Adrenergic Receptors — Walter Raasch, K.R. Julian Chun, Andreas Dendorfer and Peter Dominiak — 1

Pharmacological Characterization of a Novel Sulfonylureid-Pyrazole Derivative, SM-19712, a Potent Nonpeptidic Inhibitor of Endothelin Converting Enzyme — Kayo Umekawa, Hirohiko Hasegawa, Yasushi Tsutsumi, Kimihiko Sato, Yasuo Matsumura and Naohito Ohashi — 7

Protective Effect of SM-19712, a Novel and Potent Endothelin Converting Enzyme Inhibitor, on Ischemic Acute Renal Failure in Rats — Yasuo Matsumura, Toshihiko Kuro, Yutaka Kobayashi, Kayo Umekawa, Naohito Ohashi and Masanori Takaoka — 16

Characterization of the Ca^{2+} Response Mediated by Activation of β-Adrenoceptors in Rat Submandibular Ducts — Akihiro Nezu, Akihiko Tanimura and Yosuke Tojyo — 25

Effects of Perinatal Nicotine Exposure on Development of [^{3}H]Hemicholinium-3 Binding Sites in Rat Neonate Brain — Jun Zhu, Takanobu Taniguchi, Takashi Tanaka, Fumiko Suzuki and Ikunobu Muramatsu — 32

In Vitro and In Vivo Long Term Release of Apomorphine From Polymer Matrices — Walter Raasch, Carsten Slotty and Peter Dominiak — 36

Cholecystokinin Acts as an Essential Factor in the Exacerbation of Pancreatic Bile Duct Ligation-Induced Rat Pancreatitis Model Under Non-fasting Condition — Koji Yoshinaga, Masataka Washizuka and Yoshihide Segawa — 44

Food Deprivation Depletes Gastric Mucus Glycoprotein in Streptozotocin-Induced Diabetic Rats — Shigeki Igarashi, Eisuke Kume, Hiroshi Narita and Mine Kinoshita — 51

Effects of Benidipine Hydrochloride on Cerebrovascular Lesions in Salt-Loaded Stroke-Prone Spontaneously Hypertensive Rats: Evaluation by Magnetic Resonance Imaging — Hideo Ueno, Takuji Hara, Akio Ishi and Katsuichi Shuto — 56

Protection by Polaprezinc, an Anti-ulcer Drug, Against Indomethacin-Induced Apoptosis in Rat Gastric Mucosal Cells	Yasuyoshi Fujii, Tatsuya Matsura, Masachika Kai, Hironaka Kawasaki and Kazuo Yamada	63

Number 2 October 2000

Alteration in Expression Profiles of a Series of Diabetes-Related Genes in *db/db* Mice Following Treatment With Thiazolidinediones	Akiko Suzuki, Toru Yasuno, Hitoshi Kojo, Jiro Hirosumi, Seitaro Mutoh and Yoshitada Notsu	113
Calcium Signaling and c-Fos Gene Expression via M_3 Muscarinic Acetylcholine Receptors in Human T- and B-Cells	Takeshi Fujii and Koichiro Kawashima	124
Involvement of the Renal Kallikrein-Kinin System in Furosemide-Induced Natriuresis in Rats	Tomoe Fujita, Yuji Kumagai, Yasuhiro Ikeda, Naoya Inamura, Tomonori Iwata, Michiko Ogino and Masataka Majima	133
Intracellular Ca^{2+} Increase in Neuro-2A Cells and Rat Astrocytes Following Stimulation of Bradykinin B_2 Receptor	Yuri Ikeda, Akinori Ueno, Hiroaki Naraba, Norio Matsuki and Sachiko Oh-ishi	140
Effect of Endothelin-1 (1 – 31) on Human Mesangial Cell Proliferation	Masanori Yoshizumi, Shoji Kagami, Yuki Suzaki, Koichiro Tsuchiya, Hitoshi Houchi, Tetsuhiro Hisayama, Hiroyuki Fukui and Toshiaki Tamaki	146
Effects of Long-Term Treatment With Calcium Antagonists on Periarterial Nerve Function in the Mesenteric Artery of Spontaneously Hypertensive Rats	Akira Nakatsuma, Hiromu Kawasaki, Yuji Kurosaki, Kojiro Futagami, Hiroaki Araki and Yutaka Gomita	156
The Scopolamine-Induced Impairment of Spatial Cognition Parallels the Acetylcholine Release in the Ventral Hippocampus in Rats	Kenichi Mishima, Katsunori Iwasaki, Hiroshi Tsukikawa, Yoshiaki Matsumoto, Nobuaki Egashira, Kohji Abe, Takashi Egawa and Michihiro Fujiwara	163
Investigation Into the 5-Hydroxytryptophan-Evoked Luminal 5-Hydroxytryptamine Release From the Guinea Pig Colon	Shu-ichi Kojima, Masashi Ikeda and Yuichiro Kamikawa	174
Involvement of Complexin II in Synaptic Plasticity in the CA1 Region of the Hippocampus: The Use of Complexin II-Lacking Mice	Guang-Zhe Huang, Hisamitsu Ujihara, Sei-ichi Takahashi, Hideto Kaba, Takeshi Yagi and Shinpei Inoue	179
Antinociceptive Activity of the Novel Fentanyl Analogue iso-Carfentanil in Rats	Sonja Vučković, Milica Prostran, Milovan Ivanović, Zorana Ristović and Radan Stojanović	188
Effect of SMP-300, a New Na^+/H^+ Exchange Inhibitor, on Myocardial Ischemia and Experimental Angina Models in Rats	Setsuko Yamamoto, Kazuki Matsui, Masao Sasabe, Masahumi Kitano and Naohito Ohashi	196
Recombinant Adeno-associated Virus Vectors Efficiently Transduce Foreign Gene Into Bovine Aortic Endothelial Cells: Comparison With Adenovirus Vectors	Shinji Teramoto, Takeo Ishii, Takeshi Matsuse and Yoshinosuke Fukuchi	206
Oxidation of Ranitidine by Isozymes of Flavin-Containing Monooxygenase and Cytochrome P450	Woon-Gye Chung, Chang-Shin Park, Hyung-Keun Roh, Woon-Kee Lee and Young-Nam Cha	213

Number 3 November 2000

Effects of Higenamine on Regulation of Ion Transport in Guinea Pig Distal Colon	Weixin Liu, Yoshihiko Sato, Yoshisuke Hosoda, Koki Hirasawa and Hiroyuki Hanai	244
TAS-301 Blocks Receptor-Operated Calcium Influx and Inhibits Rat Vascular Smooth Muscle Cell Proliferation Induced by Basic Fibroblast Growth Factor and Platelet-Derived Growth Factor	Eiji Sasaki, Yoshihisa Nozawa, Kazuhisa Miyoshi, Atsuhiro Kanda, Yasundo Yamasaki, Hidekazu Miyake and Naosuke Matsuura	252
Behavioral and Pharmacological Studies on Gluten Exorphin A5, a Newly Isolated Bioactive Food Protein Fragment, in Mice	Masakatsu Takahashi, Hiroko Fukunaga, Hiroshi Kaneto, Shin-ichi Fukudome and Masaaki Yoshikawa	259

Activation of Cerebral Function by CS-932, a Functionally Selective M_1 Partial Agonist: Neurochemical Characterization and Pharmacological Studies	Nobuyoshi Iwata, Masao Kozuka, Takao Hara, Tsugio Kaneko, Toshiyuki Tonohiro, Masahiko Sugimoto, Yoichi Niitsu, Yusuke Kondo, Tsuneyuki Yamamoto, Jun-ichi Sakai and Mitsuo Nagano	266
Dexamethasone or Triamcinolone Increases Follicular Development in Immature Female Rats	Atsushi Tohei, Satoshi Sakamoto and Hiroshi Kogo	281
Partial Agonistic Effects of Carteolol on Atypical β-Adrenoceptors in the Guinea Pig Gastric Fundus	Takahiro Horinouchi and Katsuo Koike	287
Effects of *Maitake* (*Grifola frondosa*) Polysaccharide on Collagen-Induced Arthritis in Mice	Kazunori Shigesue, Noriko Kodama and Hiroaki Nanba	293
Pharmacological Characteristics of Inhibitory Action of the Selective α_1-Antagonist JTH-601 on the Positive Inotropic Effect Mediated by α_1-Adrenoceptors in Isolated Rabbit Papillary Muscle	Xiaoying Qiao, Ikuo Norota and Masao Endoh	301
Effect of the Selective Adenosine A_1-Receptor Antagonist KW-3902 on Lipopolysaccharide-Induced Reductions in Urine Volume and Renal Blood Flow in Anesthetized Dogs	Kozo Yao, Yasuhiro Ina, Ken Nagashima, Tetsuji Ohno and Akira Karasawa	310
Hypotensive Interaction of Sildenafil and Nicorandil in Rats Through the cGMP Pathway but Not by K_{ATP} Channel Activation	Nobuhiko Ishizuka, Keiji Saito, Michitaka Akima, Shuzo Matsubara and Motoo Saito	316
Correlation Between Adenine Nucleotide-Induced Cyclic AMP Elevation and Extracellular Adenosine Formation in NG108-15 Cells	Satoko Ohkubo, Junko Kimura and Isao Matsuoka	325
Mechanisms of [2,3-Butanedione Bis(N^4-Dimethylthiosemicarbazone)]zinc (Zn-$ATSM_2$)-Induced Protection of Cultured Hippocampal Neurons Against *N*-Methyl-D-Aspartate Receptor-Mediated Glutamate Cytotoxicity	Megumi Kubota, Yasuhiko Iida, Yasuhiro Magata, Youji Kitamura, Hideaki Kawashima and Hideo Saji	334
Cortical Astrocytes Exposed to Tributyltin Undergo Morphological Changes In Vitro	Satomi Mizuhashi, Yuji Ikegaya, Nobuyoshi Nishiyama and Norio Matsuki	339

Number 4 December 2000

Characteristics of Monkey Tryptase Purified From Cheek Pouch Vascular Tissues	Masato Sakaguchi, Shinji Takai, Denan Jin, Mayumi Yamada and Mizuo Miyazaki	375
Effects of Adrenergic α_2-Receptor Agonists on Urinary Bladder Contraction in Conscious Rats	Hitoshi Kontani, Toshitsugu Tsuji and Satoko Kimura	381
Effects of *S*-Nitroso-Cysteine on Proteins That Regulate Exocytosis in PC12 Cells: Inhibitory Effects on Translocation of Synaptophysin and ADP-Ribosylation of GTP-Binding Proteins	Tomoyoshi Naganuma, Mutsuko Maekawa, Toshihiko Murayama and Yasuyuki Nomura	391
Stimulation of High-Affinity GTPase Activity Through Group II Metabotropic Glutamate Receptors in Rat Hippocampal and Striatal Membranes	Yuji Odagaki, Nobuyuki Nishi and Tsukasa Koyama	399
Enhancement of Peptone-Induced Gastric Acid Secretion in Streptozotocin-Induced Diabetic Rats	Akinobu Fujita, Kimihito Tashima, Masato Nishijima and Koji Takeuchi	405
Increase of Calmodulin III Gene Expression by μ-Opioid Receptor Stimulation in PC12 Cells	Sanyoung Niu, Che-Hui Kuo, Yehua Gan, Etsuko Nishikawa, Tetsushi Sadakata, Hisashi Ichikawa and Naomasa Miki	412
Role of 5-HT_{1A} Receptors in a Mouse Passive Avoidance Paradigm	Nicoletta Galeotti, Carla Ghelardini and Alessandro Bartolini	418
Effects of Nitric Oxide on the Vestibular Functional Recovery After Unilateral Labyrinthectomy	Jong-Seong Park and Han-Seong Jeong	425

Role of Ca^{2+} Mobilization in Muscarinic Receptor-Mediated Membrane Depolarization in Guinea Pig Ileal Smooth Muscle Cells	Toshihiro Unno, Tadafumi Inaba, Hidenori Ohashi, Tadashi Takewaki and Seiichi Komori	431
Enhancement of Intracellular Cl^- Concentrations Induced by Extracellular ATP in Guinea Pig Ventricular Muscle	Zhong-Fang Lai and Katsuhide Nishi	438
The Functional Ratio of Chymase and Angiotensin Converting Enzyme in Angiotensin I-Induced Vascular Contraction in Monkeys, Dogs and Rats	Denan Jin, Shinji Takai, Mayumi Yamada, Masato Sakaguchi and Mizuo Miyazaki	449
Fasting Exacerbates Acute Pancreatitis by Occlusion of the Common Bile Duct in Rats	Koji Yoshinaga, Masataka Washizuka and Yoshihide Segawa	455

Short Communications

Number 1 September 2000

Serotonin Induces Apoptosis in PGT-β Pineal Gland Tumor Cells	Sung-Vin Yim, Kyung-Hwan Kim, Chang-Ju Kim and Joo-Ho Chung	71
Cardiac Angiotensin II Receptors Are Downregulated by Chronic Angiotensin II Infusion in Rats	Makoto Katoh, Kensuke Egashira and Akira Takeshita	75
Repeated Adenosine Pre-treatment Potentiates the Acute Effect of Methamphetamine in Rats	Atsuko Kawashimo, Takao Shimazoe, Akiko Yoshimatsu and Shigenori Watanabe	78
Captopril Increases the Affinity of Bradykinin Receptor Binding Sites in Bovine Coronary Arterial Endothelial Cells	Atsushi Miyamoto, Tomoko Matsuyama, Shigeru Ishiguro and Akira Nishio	82
Effect of Intracerebroventricular Administration of Soybean Lecithin Transphosphatidylated Phosphatidylserine on Scopolamine-Induced Amnesic Mice	Satoru Suzuki, Akito Kataoka and Masayoshi Furushiro	86
Effect of Mexiletine on Thermal Allodynia and Hyperalgesia in Diabetic Mice	Junzo Kamei and Ko Zushida	89
The Effects of Soybean Transphosphatidylated Phosphatidylserine on Cholinergic Synaptic Functions of Mice	Hideyuki Yamatoya, Masashi Sakai and Satoshi Kudo	93

Number 2 October 2000

Acetylcholine-Induced Smooth Muscle Contraction of Intrapulmonary Small Bronchi Is Augmented in Antigen-Induced Airway Hyperresponsive Rats	Yoshihiko Chiba, Yuka Takada, Hiroyasu Sakai, Hisao Takeyama and Miwa Misawa	221
Non-competitive Inhibition of Kainate-Induced Currents by Diethylstilbestrol in Acutely Isolated Mouse CA1 Hippocampal Neurons	Hitoshi Ishibashi, Satoshi Okuya, Hideaki Shimada and Kazuo Takahama	225

Number 3 November 2000

Effect of the Selective Adenosine A_1-Receptor Antagonist KW-3902 on Tubuloglomerular Feedback in Radiocontrast-Media-Induced Nephropathy in Rats With Chronic Nitric Oxide Deficiency	Kozo Yao, Nils Heyne and Hartmut Osswald	347
Correction of Hyperglycemia and Insulin Sensitivity by T-1095, an Inhibitor of Renal Na^+-Glucose Cotransporters, in Streptozotocin-Induced Diabetic Rats	Akira Oku, Kiichiro Ueta, Kenji Arakawa, Tomomi Kano-Ishihara, Takeshi Matsumoto, Tetsuya Adachi, Koichiro Yasuda, Kinsuke Tsuda, Katsuo Ikezawa and Akira Saito	351
Effect of APGW-Amide on $[Ca^{2+}]_i$ in Rat Pheochromocytoma PC12 Cells	Xiao Yan Han, Yuzuru Ito, Yoshinori Nozawa, Yifa Jiang and Kenichi Matsunami	355

Periarterial Electrical Nerve Stimulation-Induced Adrenergic Vasoconstriction Inhibited by Adrenergic α_{1B}-Receptor Blockade but Not by α_{1A}-Blockade — Xiao-Ping Yang and Shigetoshi Chiba — 360

Xanthine Oxidase-Derived Reactive Oxygen Species Activate Nuclear Factor Kappa B During Hepatic Ischemia in Rats — Nobuaki Matsui, Ikuko Satsuki, Yuka Morita, Keiichi Inaizumi, Kazumi Kasajima, Reiko Kanoh, Nobuyuki Fukuishi and Masaaki Akagi — 363

Number 4 December 2000

Itch-Associated Responses of Afferent Nerve Innervating the Murine Skin: Different Effects of Histamine and Serotonin in ICR and ddY Mice — Tatsuya Maekawa, Hiroshi Nojima and Yasushi Kuraishi — 462

The Effects of Melatonin in Glutamate-Induced Neurotoxicity of Rat Cerebellar Granular Cell Culture — Akçahan Gepdiremen, Selma Düzenli, Ahmet Hacımüftüoğlu, Dilek Bulucu and Halis Süleyman — 467

Effect of Hydrogen Peroxide on Guinea Pig Nasal Mucosa Vasculature — Tomohisa Hirai, Hiromichi Tsuru, Noriaki Tanimitsu, Masaya Takumida, Hiroshi Watanabe, Koji Yajin and Masashi Sasa — 470

Rapid Communications

Number 1 September 2000

SK4 Encodes Intermediate Conductance Ca^{2+}-Activated K^+ Channels in Mouse Urinary Bladder Smooth Muscle Cells — Susumu Ohya, Shunichi Kimura, Mika Kitsukawa, Katsuhiko Muraki, Minoru Watanabe and Yuji Imaizumi — 97

Number 4 December 2000

Ca^{2+}-Sensitization of Contraction in the h1 Calponin-Deficient Smooth Muscle — Ryo Yoshimoto, Masatoshi Hori, Katsuhito Takahashi, Shun-ichiro Taniguchi, Motoya Katsuki, Hiroshi Ozaki and Hideaki Karaki — 474